

WE CLAIM:

1. An endoprosthesis for use in supporting a body conduit, said device comprising a stent having structural elements and interstices between adjacent structural elements, said stent having a first diameter prior to implantation and a second diameter following
5 implantation wherein said first diameter is smaller than said second diameter, said stent being provided with a covering over at least a portion of said structural elements wherein the covering comprises a flexible material which is substantially liquid impermeable, wherein said stent foreshortens less than about 10 percent of its length at its first diameter when
10 deployed to the second diameter, and wherein one or more of said stent elements provide means for anchoring said stent to said body conduit.

2. An endoprosthesis according to claim 1 wherein the stent is a balloon expandable stent.

3. An endoprosthesis according to claim 1 wherein the stent is a self expanding stent.

4. An endoprosthesis according to claim 1 wherein the stent is a nitinol stent.

5. An endoprosthesis according to claim 4 wherein the stent is nitinol wire.

6. An endoprosthesis according to claim 5 wherein the stent comprises nitinol wire formed into a serpentine pattern which is helically wrapped into a tubular form.

7. An endoprosthesis according to claim 6 wherein the nitinol is a single nitinol wire.

8. An endoprosthesis according to claim 6 wherein one or more apices of the serpentine pattern protrude inwardly from the tubular form.

9. An endoprosthesis according to claim 6 wherein the anchoring means comprise one or more apices of the serpentine pattern which are formed to outwardly protrude beyond the tubular form.

10. An endoprosthesis according to claim 9 wherein the anchoring means comprise one or more outwardly protruding apices which are formed from a wire that is continuous with other apices that do not protrude outwardly beyond the tubular form.

5 11. An endoprosthesis according to claim 1 wherein the covering is a porous material rendered non-porous or substantially non-porous by a coating.

10 12. An endoprosthesis according to claim 11 wherein the covering is rendered substantially impermeable to body fluids by a coating process selected from the group consisting of spray coating, imbibing, lamination, powder mixing, powder coating, dispersion mixing, co-coagulation, co-extrusion, melt flow extrusion, draw extrusion and impregnation.

15 13. An endoprosthesis according to claim 11 wherein the covering is porous expanded polytetrafluoroethylene.

14. An endoprosthesis according to claim 12 wherein the porous expanded polytetrafluoroethylene is rendered non-porous or substantially non-porous by a thermoplastic fluoropolymer coating.

20 15. An endoprosthesis according to claim 12 wherein the thermoplastic fluoropolymer is fluorinated ethylene propylene.

25 16. An endoprosthesis according to claim 1 wherein the covering is joined to the stent with an adhesive.

17. An endoprosthesis according to claim 16 wherein the adhesive is a thermoplastic adhesive.

30 18. An endoprosthesis according to claim 17 wherein the thermoplastic adhesive is a fluoropolymer.

19. An endoprosthesis according to claim 18 wherein the fluoropolymer is fluorinated ethylene propylene.

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20. An endoprosthesis according to claim 1 wherein macroscopic openings are provided through the covering.

21. An endoprosthesis according to claim 20 wherein the macroscopic openings are triangular in shape.

22. An endoprosthesis according to claim 1 wherein the covering is less than about 0.4mm thick.

23. An endoprosthesis according to claim 1 wherein the covering is less than about 0.2mm thick.

24. An endoprosthesis according to claim 1 wherein the covering is less than about 0.1mm thick.

25. An endoprosthesis according to claim 1 wherein the covering is less than about 0.05mm thick.

26. An endoprosthesis according to claim 1 wherein longitudinally oriented strips are affixed to the covering.

27. An endoprosthesis according to claim 26 wherein the longitudinally oriented strips attach the stent to the covering.

28. An endoprosthesis according to claim 1 wherein substantially liquid impermeable is indicated by no air leakage during a bubble point test at a pressure of about 13 mm Hg.

29. An endoprosthesis according to claim 1 wherein substantially liquid impermeable is indicated by no air leakage during a bubble point test at a pressure of about 26 mm Hg.

30. An endoprosthesis according to claim 1 wherein substantially liquid impermeable is indicated by no air leakage during a bubble point test at a pressure of about 39 mm Hg.

31. An endoprosthesis according to claim 1 wherein substantially liquid impermeable is indicated by no air leakage during a bubble point test at a pressure of about 52 mm Hg.

32. An endoprosthesis for use in supporting a body conduit, said device comprising a stent having a generally tubular form, said stent having structural elements and interstices between adjacent structural elements, said stent being provided with a covering over at least a portion of said structural elements wherein the covering comprises a flexible material which is substantially liquid impermeable, wherein said stent comprises a single wire, and wherein one or more of said stent elements provide means for anchoring said stent to said body conduit.

33. An endoprosthesis according to claim 32 wherein the wire comprises nitinol wire.

34. An endoprosthesis according to claim 32 wherein said single wire is formed into a serpentine pattern having apices wherein one or more apices of the serpentine pattern protrude inwardly from the tubular form.

35. An endoprosthesis according to claim 32 wherein the anchoring means comprise one or more apices of the serpentine pattern which are formed to outwardly protrude beyond the tubular form.

36. An endoprosthesis according to claim 32 wherein the covering comprises porous expanded polytetrafluoroethylene.

37. An endoprosthesis according to claim 36 wherein the porous expanded polytetrafluoroethylene is rendered non-porous or substantially non-porous with a coating of fluorinated ethylene propylene.

38. An endoprosthesis according to claim 32 wherein the covering is joined to the stent with an adhesive.

39. An endoprosthesis according to claim 38 wherein the adhesive is fluorinated ethylene propylene.

40. An endoprosthesis according to claim 1 wherein longitudinally oriented strips are affixed to the covering.

5 41. An endoprosthesis according to claim 40 wherein the longitudinally oriented strips attach the covering to the stent.

42. An endoprosthesis according to claim 32 wherein substantially liquid impermeable is indicated by no air leakage during a bubble point test at a pressure of about 13 mm Hg.

10 43. An endoprosthesis according to claim 32 wherein substantially liquid impermeable is indicated by no air leakage during a bubble point test at a pressure of about 26 mm Hg.

15 44. An endoprosthesis according to claim 32 wherein substantially liquid impermeable is indicated by no air leakage during a bubble point test at a pressure of about 39 mm Hg.

45. An endoprosthesis according to claim 32 wherein substantially liquid impermeable is indicated by no air leakage during a bubble point test at a pressure of about 52 mm Hg.

20 46. A stent-graft comprising a stent and a covering, wherein longitudinally oriented strips attach the covering to the stent.

25 47. An endoprosthesis comprising a stent having a generally tubular form, said stent having elements and interstices between adjacent elements, wherein at least a portion of one or more of the elements protrude inwardly from the tubular form.